

ESTABLISHED 1848

RURAL
WORLD

COLMAN'S RURAL WORLD

DEVOTED TO AGRICULTURE HORTICULTURE HORSES CATTLE SHEEP SWINE ETC.

Established 1848.

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COLMAN'S RURAL WORLD.

NORMAN J. COLMAN,
H. A. BERNARD, EDITORS.

Published every Wednesday, in Chemical building, corner of Eighth and Olive streets, St. Louis, Mo., at one dollar per year. Eastern office, Chalmers D. Colman, 330 Temple Court, New York City. Advertisers will find the RURAL WORLD the best advertising medium of its class in the United States. Address all letters to COLMAN'S RURAL WORLD, Chemical Building, St. Louis, Mo.

Subscribers must bear in mind that the subscription price of the RURAL WORLD is one dollar a year, and that we do not receive single subscriptions for a less sum, but in our constant effort to enlarge our circulation, we do allow old subscribers to take actually NEW subscribers at the fifty-cent rate, adding a new name with their own for one dollar, and other new names at fifty cents each, but in no case do we accept two OLD subscribers for one dollar. We are willing to make a loss on a new subscriber the first year, believing he will find the RURAL WORLD indispensable ever after. We also send the RURAL WORLD in conjunction with either the twice-a-week St. Louis "Republic" or the twice-a-week "Globe-Democrat" for one dollar and fifty cents a year, and new subscribers may be added at the fifty-cent rate. Published at this remarkably low price—less than actual cost—all subscribers must see the necessity of our dropping from our subscription list every name as soon as the year paid for expires. Thus if, on the printed slip of each paper you see John Jones May 2, it indicates that the name will drop from the list at the end of May, and if he wishes to continue to receive it, he must renew his subscription. If he would do it a week or two in advance, it would save us the trouble of taking his name off the list and again putting it in type, when he renewed, which frequently causes mistakes.

Missouri has a record unequalled by any other state as a winner of premiums at our great exhibitions. At the recent Charleston exposition there were awarded to Missouri forty-eight gold medals, twenty-six silver medals, seven bronze medals, thirty-four honorable mentions and two diplomas of merit.

We neglected to acknowledge, as we should have done last week, the receipt of a case of strawberries from Mr. E. H. Riehl of North Alton, Ill., containing a large number of the newer varieties picked and shipped in the highest style of cultivation. The berries were of large size, of various shades of color, as well as of quality, but as Mr. Riehl gave a description of a large number of his varieties in a late number of the RURAL WORLD, it is hardly necessary to redescribe them. Mr. Riehl has the thanks of the RURAL WORLD staff for the liberal contribution of the king of all the berries.

UNEQUAL DISTRIBUTION.

One of the remarkable features of the record of precipitation for the last two years is the extreme inequality of distribution. During the great drought throughout the middle states of 1901 the Pacific and Rocky Mountain states, the North Atlantic states and New England received more than their usual allotment. The latest crop bulletins show heavy rainfall in northern portions of Missouri and large areas in Iowa, while in the eastern part of Missouri the precipitation is much below normal.

This seems to verify the current statement that the average annual rainfall for the whole country varies but little from year to year.

FARMERS' BULLETIN NO. 155.

A new bulletin issued by the United States Department of Agriculture has just been received. "How Insects Affect Health in Rural Districts" is its title, and it is written by Prof. L. O. Howard, the celebrated entomologist, whose investigation of the life and habits of the mosquito have made him famous. This little pamphlet will tell you more about mosquitoes than you ever knew before. Our readers should not forget that these bulletins are issued free by the Department of Agriculture on request. They contain the latest knowledge of subjects relating to all phases of farm life and constitute a liberal education without cost. Every farmer who can read should avail himself of this free "correspondence school of agriculture."

A NEW FARM SCHOOL.

One of the most significant signs of the times, illustrating the importance with which agricultural pursuits, and especially agricultural education is regarded, is shown by the signing of contracts for the purchase of a school of practical agriculture of 65 acres of land near Poughkeepsie, N. Y. It will be one of the most unique educational institutions in the country. Less than two years ago a number of citizens prominent in political and

social life met at the residences of Abram S. Hewitt and R. Fulton Cutting and formed themselves into an organization for establishing, experimentally, a school where the practice as well as the theory of farming could be taught. Prof. George T. Powell, a recognized authority on scientific agriculture, undertook the organization of the school, and a number of ladies and gentlemen agreed to finance the project in its experimental stages. The original committee of promotion, of which Mr. Hewitt was chairman, included: Fulton Cutting, Jacob H. Schiff, John G. Carlisle, Mrs. Bethune Lowe, Mrs. Josephine Shaw Lowell, Walter W. Law and William E. Dodge.

The original school establishment was at Briar Cliff manor, provided by the generosity of Mr. Law, who also furnished a building to accommodate thirty-five students and the necessary staff. The success of the school was immediate, and the originators then concluded to extend the facilities. The board of trustees was then organized, with the following officers: Theodore L. Van Nostrand, president; Abram S. Hewitt and William E. Dodge, vice-presidents; R. Fulton Cutting, treasurer, and Thos. T. Lamer, secretary. With such prominent names at the head of any movement great good may be expected.

BRAINS AND BRAWN.

Many farmers, ambitious to succeed, sacrifice their best years in hard physical labor, rising early and working late, and then wonder why they do not "get ahead." They seem to think that farming is a matter of hard work only. They should not forget that ideas form the basis of all enterprises and that a plan must first be conceived and well considered before it can be put into execution. A man who is physically exhausted cannot think well. A certain amount of open-air exercise stimulates the imagination and aids clear, sane thought, but every human body, a machine, has its limits for endurance, and when its allotted amount of energy has been expended in severe bodily toil there is nothing left to think with. The body cries out for rest, and thus it goes day by day until the man becomes a strong working animal, indeed, but with a weakened capacity for planning and managing that work which will be most profitable.

If you could hire a man to work a month for \$20, but do the work yourself instead, you earn the \$20 to be sure, but you may have drawn on your capacity to manage your affairs to an extent that you will never recover.

A Texas farmer fell sick through overwork and had temporary help. When he began to recover he felt under obligations to his helpers and did not at once discharge them. He began to read and plan and consult the markets, and soon saw that his business was improving. A good health. Within a year he had made more money than he had ever done in the same time by his own unaided efforts. This is the experience of every one who breaks away from the old drudgery and begins to give his brains a chance in the business as well as his hands. A good farm paper presents in concentrated form the latest and best things an intelligent farmer needs to know. Don't get so busy you cannot find time to read carefully on subjects relating to your special work.

SAVE THE STRAW.

The golden wheat harvest of 1902 was soon gathered, and in a few weeks the grain will be sacked, and big bales of straw, left by the automatic stacker, will dot the landscape from California. That's a big landscape, and if all the straw from the wheat fields of 1902 could be stacked in one pile it would make a bigger mountain than any terrestrial peak. If a ton of straw is left in the field every twenty bushels of grain stacked, the straw crop, which is usually burned or wasted by weathering, would amount to nearly 50,000,000 tons.

It has been said that afflictions are lessons. A good many people of late have regarded the beef trust as an affliction. At any rate, the wheat farmer, or any other kind, can learn a lesson of economy from the beef-packer in studying their method of utilizing every scrap of material which passes through their hands. They have stated that their profit is realized from the by-products of their abattoirs—the dried blood, the compressed fertilizer, the glue from hoofs and buttons from bones. All of a pig they utilize except the squeal, and they may need that before long, from present indications.

The corn farmer is just beginning to learn the value of corn stover, and as land gets scarce and prices of forage advanced there will be more stover shredded and baled or put under shelter and fed than ever before. Straw is usually despised and allowed to waste, but it can be used in so many ways as to constitute in many cases the item of profit in a crop of wheat.

In the first place, it can be stacked properly, with little extra expense, to keep out the soak and lessen the amount of bleached and spoiled straw. Baled and shipped it will bring from \$4.50 to \$5.00 per ton in the St. Louis market. As a source of humus, fertilizer and mulch for potatoes and other intense crops, it will well repay the labor involved. It is not necessary to mention its value to a hungry steer for both food and shelter.

The writer fed twenty head of grade Jerseys during last winter on an exclusive roughage ration of wheat straw, supplemented, it is true, with a liberal grain feed of bran, middlings and oil meal. Hay

was out of sight as to price and supply, and the results were a source of continued surprise when those cows kept on giving milk during a long and cold winter, and while rough they went onto grass in better shape than could have been expected. They picked up amazingly during the first month of pasturing, and gave almost as much milk per capita as the scales had shown in the preceding fall from fairly good November pasture. If alfalfa or clover had been fed more milk would have been obtained, but past experience shows that the probable increase would have been more than offset by the augmented cost of roughage. The secret of successful farming is "no waste," and every owner of a straw stack should begin to think about turning it to its most profitable use. Build the rack as carefully as though it were made of tin. Keep your straw bright and dry and its feeding value will be doubled.

IRRIGATION AND CULTIVATION.

In another column we publish a news item showing progress made in Congress by the friends of irrigation. In the arid region irrigation is a necessity, in the semi-arid a great boon, and in every farmer in the Mississippi Valley has a regular water supply he would be independent of nature's source, and crops would be more certain in their outcome. Until there is a greater possibility than now seems apparent of establishing anything like a general irrigation system in the Mississippi Valley, farmers should not forget that the proper saving and use of the rainfall they do get in drouthy times is possible now and anywhere without expense or experience and needs but a thoughtful appreciation of the value of proper tillage. A little rainfall will go a long way under the right kind of soil cultivation. Two examples during the drought of 1901 came under the writer's personal notice. Eight acres of corn, planted on rich soil, deeply plowed, full of humus and cultivated perfectly by the level method, and a half-acre only, to the depth of one and a half inches, gave the only well-filled ears that came to the writer's notice in St. Louis county except that grown on bottom land. Not three hundred yards from this oasis, to which an intelligent and adaptive German had applied the same sense and good judgment, another field of corn was grown by a farmer who had always used a two-horse four-shovel cultivator, and he wasn't going to do any different for a little thing like a drought. He threw up his ridges when his corn was just in tassel and watered as deep as he could hold it, and in less than three days the whole field was as yellow as a Panama hat, and just about as palatable. This illustrates again that farming is not, and perhaps never will be, an exact science, but is still largely an experimental art, with scientific knowledge as the compass and a reasoning adaptability to apply that knowledge as the varying conditions require, being the superstructure and success crowning the whole, as the quadrangle crowns the beautiful architectural triumphs of our modern Michael Angelos.

THE MISSOURI STATE FAIR.

We hope the farmers, stock-breeders, dairymen and fruit-growers of Missouri properly appreciate that they have a State Fair, located in a central part of the state, at which they can exhibit their products, of whatever nature, and that they are preparing to make such a display as will redound to their individual credit and to the credit of the state as well. There should be no lukewarmness in the support to be given to the fair this season. Probably at no future period will it need support as it needs it now. But one fair has as yet been held by the State Association. Luckily the weather was favorable, the exhibitions in the various departments creditable, and, upon the whole, the first fair was a great success. The coming fair, which opens August and continues one week, be equally successful? It is for the good people of Missouri to say. If they will exhibit their products as they are capable of doing there is no doubt the second fair will be a success, but to make it such the farmers must exhibit the products of their fields and their orchards and gardens, they must show what they produce. Their best horses, cattle, sheep, swine and poultry must be on exhibition.

By making the approaching fair a success it will do much to influence the Legislature to make liberal appropriations for the erection of needed buildings in which to make future exhibits. The buildings already erected are highly creditable, but more are necessary, and if a state fair is properly appreciated and supported, and if the coming fair is made a success the money will be forthcoming to erect other necessary buildings. There is no reason why Missouri should not have the best state fair in the Union. All of the great national exhibitions she has taken a larger number of premiums than any other state. Farmers of Missouri, come to the support of your state fair this season! It opens at Sedalia in less than sixty days from the time these lines reach your eyes. We believe you have enough state pride to give it your cordial support and make it in every way a most successful state exposition. Those desiring a premium list of the State Fair should write Col. J. R. Rippey, secretary, Sedalia, Mo., asking for it and it will be promptly sent.

WHEN TO SOW ALFALFA.

Editor RURAL WORLD: I am thinking of sowing part of my farm to alfalfa for hay and pasture, and would like to know when the best time is to sow the seed—in the fall or spring. If sown in the spring alone can it be cut the same year for hay? I trust some one who has had experience with alfalfa will let me know through the RURAL WORLD.

Scott Co. Mo. J. SCHUBERT.

REMARKS.—We sowed eight acres about the middle of April. It came up well and is now about a foot high. When 6 or 8 inches high we run over it with a mowing machine, cutting off the weeds and some of the taller alfalfa. Shall run the machine over it again soon. At our farm in St. Louis county we have had but very little rain. The ground is very dry and unless rain comes soon the alfalfa and all other crops will suffer. We sowed the alfalfa with no other crop. With favorable rains we undoubtedly will get a small crop of hay this year, but a good crop is not to be expected the first season. The weeds must be kept short by the mowing machine the first year or the alfalfa will smother.

THE STATE HORTICULTURAL MEETING AT ELDON, MO.

Editor RURAL WORLD: A clear, bright summer sun shone on the Ozark hills at Eldon the morning of June 11 when the train of the Lebanon branch of the Missouri Pacific railroad deliberately pulled into this charming country village. The new in all directions was one to satisfy the gaze of the most prosaic-looking grain and promising corn fields made the drought of last year an event of the long, long ago. Farmers were rushing in the best of spirits to harvest the wheat and cultivate the corn.

Eldon is most beautifully located, and is surrounded by a magnificent prairie and timber country. It is a charming rural town. The painter has been busy and the town looks neat and attractive.

The members of the Horticultural Society were given a most royal reception. The new railroad—then "Colorado"—which is being built to the westward, has accommodations of the most comfortable kind, but it seemed as if all the homes of the leading citizens were opened to the members of the society, and in every group congregated before and between sessions the members were warm in their praise of Eldon's hospitality and in the high character of the citizens. A commendation was just, for we found in these people intelligence, refinement and culture that would grace the most aristocratic city home, and all gave freely for our entertainment and comfort.

The personnel of the society members—being mostly from the western states—were deeply impressed with the high character of the membership of the Missouri State Horticultural Society. The topics under discussion were so treated that those participating in them gave evidence of a wide reach of literary contact. It might seem strange to the uninitiated to hear those bronze-faced farmers, in an unostentatious way, quote the classic poets, mention the Darwinian theory and discuss delicate scientific facts. We listened with keen delight and interest to the remarks of the speakers after all, that so many of our great men are cradled in country homes. A study of these men and women was an inspiration. It would be difficult to find finer specimens of magnificent manhood and womanhood. We wish we might give you our impressions of many of them and of the power of their work. W. C. Adams, who we watched the sturdy form of Major J. C. Evans and heard the ring of his positive tones in proclaiming practical horticultural truths gleaned in fields of large experience.

Then the voice of L. A. Goodman's keen foresight and ever watchful eye for the best interests of the society were always evident. N. F. Murray, so careful that only exact horticultural information be given exerts an influence that is wide-reaching and will be time-lasting. Mr. Butterfield is another one of these days, and mostly in the past it is highly appreciated. His Farmington Fruit Farm is giving new impetus to horticulture in southeastern Missouri.

We were all reminded of dear old Judge Samuel Miller when someone asserted that his Captain Jack strawberry was still one of the money-makers. His gentle, kindly presence was missed from the gathering. And there was another vacancy that only the person of A. Nelson could have filled. Possibly their spirits hovered over the meeting.

But we were impressed by the thought that great as has been the performance of the Missouri State Horticultural Society its promise is fully as great, for in the young blood that is coming into activity in the society there is earnestness and ability which will carry the work forward in such manner as to do honor to the veterans who have brought it thus far.

The women were present with our admiration for their graceful deportment and strength of character. Mrs. Dugan (May Myrtle), who read a paper, "Inspiration of Flowers," which seemed to be the keynote of the meeting. It was a most happily selected topic.

We were much pleased to see the evidence of victory won over seemingly adverse conditions and to hold in our hand the bronze medal awarded by the Paris Exposition for a fruit display made by Mr. D. R. Edwards of Versailles, Morgan County, Mo.

We never spent two days in more congenial company and under more delightful

conditions; we felt that we had spent them with God's noblemen, who were trying to make human conditions better and to increase knowledge, and the reflex of this high aim was to be found in their own culture and refinement.

MRS. LEVI CHUBBUCK.

St. Louis, Mo.

THE VALUE OF A THOROUGH KNOWLEDGE OF THE CROPS WE RAISE.

Editor RURAL WORLD: For every reason that holds the student of commerce undertaking there is at least one for the study of agricultural undertakings. In fact, the man who attempts to deal with growing things will find himself confronted with problems which the manufacturer or commercial man never thought of. We can see the importance of a thorough understanding of their natural requirements than we can be successful in conducting any business enterprise without having first made ourselves familiar with the principles underlying the growth of the plants we deal with. Natural elements has a larger problem on his hands than he who has to do only with the products of natural elements.

If we would be successful in the culture of Indian corn we must first know what the plant requires in the way of water, water, cultivation and climate conditions. Two of these lessons are early learned—viz., the fact that plenty of water must be had, and that the sun must be generous in supplying heat. We do not always stop to think just why water is so necessary. If we did give more attention to this thought we should be surprised to find that the very largest percentage of all its functions of growth, either directly or indirectly, by the aid of water and the sun's light and heat. No food can be supplied in a form available to the plant without first being broken down and brought into solution by the action of water. After the minute particles of rock and vegetable matter are broken down and have passed into solution they enter the very small rootlets of the plant and are carried along in the stream until they have passed all growing parts of the plant and nourishment has been taken over, which the growth of the plant uses for development. Thus we have learned the idea of the extent of the root systems of crops, know whether they are plants that get food readily, know whether they demand large quantities of a particular element in the soil—in short, if we know something of what the plant is and what it demands as well as the means for developing its demand—we can work intelligently. In the production, therefore, of natural products, constant care and thought are absolutely necessary.

But the value of this knowledge of our farm plants does not end with their production. It enters very largely into the disposition that is to be made of them. Our study and knowledge should follow the circle from production to consumption, and final return to the soil. In our words, our working knowledge must be a thorough one.

In the crops we raise, then, we should remember the soil and its cultivation should be such that the plant may have food, moisture and air, and that it may also be able to make the best possible use of the heat of the sun. The more nearly these conditions are supplied the more will the plant be able to develop perfectly and the better satisfied will the producer be with his efforts.

F. S. JOHNSTON.

Purdue University, Lafayette, Ind.

PEBBLES FROM THE POTOMAC.

Editor RURAL WORLD: Through the columns of the RURAL WORLD we glean the fact that the grain and fruit yield this season will be abundant, a condition that will be hailed with every manifestation of genuine appreciation by all mankind. The severe drought of last season has not disheartened the energetic farmer who will endeavor to make up for lost time this season. Some one has given a definition of the scabbard when the sword is broken. This is the kind of grit that the American farmer has, and it is not at all surprising that he wins despite any and all obstacles, be they great or small. Our local market is well supplied with choice vegetables, fruit and melons, indicating the summer has spread a bountiful banquet and invites all to partake of the nourishing feast. The outlook is indeed reassuring.

STORAGE BATTERY.

Inventor Thos. Edison has recently given to the public an intimation of what he expects to accomplish with his latest invention—the storage battery. From his interview in a prominent eastern metropolitan journal we are led to believe that this invention will prove a change of almost a revolutionary character in the electrical world. In short, his battery is light, inexpensive and gives a one-horse power for every 35 pounds of weight and possesses the ad-

vantage of being practically indestructible. The inventor claims that vehicles with these batteries can travel 100 miles without recharging. Commenting on this invention the "Chicago News" says: "The possibilities of such an improvement in storage batteries are hard to estimate. The inventor evidently regards his battery as especially applicable to land transportation, but apparently it must be of no less value in the propulsion of launches and ferries and in divers other ways in which a durable and inexpensive motor may be needed. As a means for the application and distribution of electrical power it may bring a new set of mechanical activities into play. Perhaps it may also mean the introduction of new methods of street railway transportation. In any event, it must hasten the day when the horse will cease to be a necessary factor in traffic."

LOST CORN.

Local police of Washington have been informed of a scheme whereby clever swindlers in Westmoreland county, Virginia, secured about \$3,500 worth of corn in that vicinity. The swindlers are alleged to have appeared in that section and advertised the fact that they wanted to buy old corn, for which they would pay considerably over the prevailing market price, the condition being that they deliver the corn to two vessels anchored at Leesdawn, on the Rappahannock river. The result was that a supply of corn to the amount above-mentioned was secured from the farmers and paid in checks on a Philadelphia bank. Later developments demonstrated the fact that the checks were worthless, and in the meantime the vessels had sailed away. Hence the Washington authorities are on the lookout for the corn-laden vessels, should they appear in the jurisdiction of the District of Columbia.

CENSUS REPORTS.

The government has just issued some interesting statistics on agricultural affairs, among which we find that North Carolina, on June 1, 1900, had 2,827,000 acres of land in cultivation. The value of farm implements and machinery was \$9,022,400; live stock, \$30,106,173. The total value of farm products for 1899 exceeded those of 1898 by 78 per cent., a gross farm income of North Carolina for 1899 being nearly \$90,000,000. These figures are sufficient to demonstrate the possibility of North Carolina producing extraordinary crops, notwithstanding the fact that the soil has been under constant cultivation since the colonists first located in that region. A gain of 78 per cent in the value of farm products in the past ten years in that state is a growing tribute to the genius of the American farmer, who utilizes the agricultural sciences of the present age in making soil produce almost double that of less than a quarter of a century ago. Instead of depleting its productive power, artificial schemes have added thereto, thus adding material wealth to the nation and providing comfortable homes to millions of American citizens.

A GOOD APPOINTMENT.

The appointment of Hon. Levi Chubbuck as Inspector of Indian Agencies is indeed a happy one. Mr. Chubbuck's eminent abilities as an agricultural expert amply qualify him in the discharge of this important and exacting duty. As a writer on agricultural affairs he has displayed a mind well stored with scientific facts, and evinced a happy faculty of imparting this information to the farmer in a clear, forcible and absorbing way the vast number of readers of the RURAL WORLD.—D. A more logical selection of an Indian Agency Inspector would be difficult to conceive.

FAR JAPAN.

From a copy of the "Jap" number of the Tokyo "Chronicle" we copy some of the paragraphs which may interest the readers of this paper:

"We have no doubt the average American family wastes enough to feed and clothe the average Japanese family."

"When a Japanese moves he takes the rice in the yard with him to his new home."

"Eighteen hundred young men are studying law in one school in Tokyo."

"China spends \$200,000,000 annually on idolatry."

"A baby can be bought in China for 50 cents."

PEOPLE FROM THE COUNTRY.

From the country come into town wrapped in red blankets, much in the style of the North American Indians. "Japanese children live much in the streets. Each child has attached to it a small wooden block bearing its name and address, so that when it wanders away from home, as it often does, it may easily be found."

"Business houses are subject to sudden changes. The beef house of yesterday may be a dry-goods store to-day."

S. F. GILLESPIE.

Washington, D. C., June 9, 1902.

HARVESTING AND STACKING.

Editor RURAL WORLD: As the last two weeks of June is the harvest season for most of our readers, a few suggestions may be in order. We always go over the binder a few days in advance of beginning work, and with a can of pure coal oil, oil every journal. This loosens all gum left by the old oil, and when we begin work and oil up with the regular lubricating oil the machine runs light. We use ordinary mineral oil at a cost, retail, of 35 cents per gallon; it costs by the barrel about 15 cents. In case of any journal or bearing that is given to heating, a liberal use of oil with the addition of a little graphite or black lead will prevent trouble. The pulverized graphite can

be had at almost any large mill or factory, but Rising Sun stove polish, pulverized fine in a drugist's mortar, is always available, and, used a tablespoonful to a can of oil, is a very good substitute; shake before using to keep well mixed. The above directions have been sold for \$5 to many a sawmill and threshing machine binder. Never run a canvas belt or driving chain any tighter than is necessary to do its work, as undue tension strains not only the belt but the whole machine. My binder cut 54 acres of grain in 1899, has cut from 15 to 40 acres a year since, and on some pretty rough land at that, and seems good for another year or two. Use plenty of oil, as you save cheap oil at the expense of high priced machinery and hard labor to your man.

If the harvest is a large one, requiring several days' work, one should be sure that he has plenty of teams at hand, so that if one horse gets fagged or over-heated another can be used. With my 6-foot machine I only use two horses as a rule when cutting my own harvest, but when cutting by the acre away from home I have two two-horse teams, changing often as one team shows fatigue. I have cut 14 acres in 12 hours in this way, even in our small fields. With us 14 medium-sized sheaves make a shock, and we only put on one cap sheaf or hudder, but this hudder is thoroughly "broken" and carefully put up.

It pays, and pays well, to take a barrel of water to the field and give the horses a drink every hour. One season I got one of my horses overheated a few days before harvest and he was in very bad shape. The weather was hot and I only had two horses to cut 24 acres with. Every hour one of the boys brought a bucket of fresh water from the well, and in a little over two days the wheat was in the shock and the condition of my horse greatly improved. Water for the men is also very necessary. We had very cold well water and carry it to the field in buckets. If our water was not so good we would keep a jar of ice water at hand. Prepared drinks, root beer, elder and oatmeal water, buttermilk, vinegar and molasses water and other mixtures are often recommended, but we have no use for anything but pure cold water and plenty of it. I well remember the ending of the time when whisky was found in almost every harvest field. Happily, people have more sense now.

We think it pays to set the shocks in straight rows, as it takes less driving about when hauling in. Ten days in shock and ten in stack before threshing is an old and a very good rule. We seldom leave the wheat in the field as long as 10 days, as it kills out so much grass where shocks stand, but we always leave at least 10 days in stack to sweat. Where large crops are the rule much wheat is threshed from the shock, but we never liked the plan, as a hard rain makes not only heavy expense, but hard work for the women in cooking for so many hands. With two teams to haul and a good pitcher, my oldest boy can stack 15 acres a day. There is little art in stacking wheat so long as the middle of the stacks are kept full and sun and the outer rounds laid flat and with a moderately steep slope. Most stacks take water simply because the stacker takes too much pains to lay the outside courses too close. His idea is to keep out water and he prevents this by making the outer side of the stacks so little that they cannot settle as fast as the middle does, place the outside courses loosely.

C. D. LYON.



Many of our old-time readers will be pleased to see the likeness of Hon. Levi Chubbuck of Morristown, Minn., who fifteen or twenty or more years ago was one of the acknowledged leaders in the sorghum industry, both in the manufacture of syrup and sugar. Mr. Chubbuck is still successfully and profitably engaged in this industry, notwithstanding he lives in Minnesota. He has been an exhibitor in foreign lands of both sorghum sugar and syrup, and recently received a medal and diploma from the Paris Exposition of 1900 for the high quality of his products. When the sorghum industry was in full blast, not long after the Civil War, Mr. Chubbuck was a frequent contributor to the RURAL WORLD. He attended the most important state and national conventions, and took an active part in the discussions. We are glad to know he is in the best of health and trust there are many years of active and useful life before him.

be had at almost any large mill or factory, but Rising Sun stove polish, pulverized fine in a drugist's mortar, is always available, and, used a tablespoonful to a can of oil, is a very good substitute; shake before using to keep well mixed. The above directions have been sold for \$5 to many a sawmill and threshing machine binder. Never run a canvas belt or driving chain any tighter than is necessary to do its work, as undue tension strains not only the belt but the whole machine. My binder cut 54 acres of grain in 1899, has cut from 15 to 40 acres a year since, and on some pretty rough land at that, and seems good for another year or two. Use plenty of oil, as you save cheap oil at the expense of high priced machinery and hard labor to your man.

If the harvest is a large one, requiring several days' work, one should be sure that he has plenty of teams at hand, so that if one horse gets fagged or over-heated another can be used. With my 6-foot machine I only use two horses as a rule when cutting my own harvest, but when cutting by the acre away from home I have two two-horse teams, changing often as one team shows fatigue. I have cut 14 acres in 12 hours in this way, even in our small fields. With us 14 medium-sized sheaves make a shock, and we only put on one cap sheaf or hudder, but this hudder is thoroughly "broken" and carefully put up.

It pays, and pays well, to take a barrel of water to the field and give the horses a drink every hour. One season I got one of my horses overheated a few days before harvest and he was in very bad shape. The weather was hot and I only had two horses to cut 24 acres with. Every hour one of the boys brought a bucket of fresh water from the well, and in a little over two days the wheat was in the shock and the condition of my horse greatly improved. Water for the men is also very necessary. We had very cold well water and carry it to the field in buckets. If our water was not so good we would keep a jar of ice water at hand. Prepared drinks, root beer, elder and oatmeal water, buttermilk, vinegar and molasses water and other mixtures are often recommended, but we have no use for anything but pure cold water and plenty of it. I well remember the ending of the time when whisky was found in almost every harvest field. Happily, people have more sense now.

We think it pays to set the shocks in straight rows, as it takes less driving about when hauling in. Ten days in shock and ten in stack before threshing is an old and a very good rule. We seldom leave the wheat in the field as long as 10 days, as it kills out so much grass where shocks stand, but we always leave at least 10 days in stack to sweat. Where large crops are the rule much wheat is threshed from the shock, but we never liked the plan, as a hard rain makes not only heavy expense, but hard work for the women in cooking for so many hands. With two teams to haul and a good pitcher, my oldest boy can stack 15 acres a day. There is little art in stacking wheat so long as the middle of the stacks are kept full and sun and the outer rounds laid flat and with a moderately steep slope. Most stacks take water simply because the stacker takes too much pains to lay the outside courses too close. His idea is to keep out water and he prevents this by making the outer side of the stacks so little that they cannot settle as fast as the middle does, place the outside courses loosely.

C. D. LYON.

Horticulture

THE OLD MISSOURI PIPPIN.

I had the good luck to listen to a learned pomologist, or to make it somewhat plainer an apple-ologist.

For he talked of every apple from A clear down to Z.

He said that the apple was born beneath an apple tree.

He had a word of praise for each, save one I like the best.

A rosy red-checked beauty, the peer of all the rest.

'Twas really interesting and as plain as A. B. C.

But the old Missouri Pippin is good enough for me.

He rated his clinched fist upward and shouted as it fell.

"Ben Davis is the apple for you to raise and sell."

It stands among the apples as stood the old King Saul.

Among the ancient Hebrews, head and shoulders 'bove them all.

It never goes a-begging in the markets of the world.

It is monarch, plant no other," his lips were never curled.

"And you never will regret it in future years to be."

But the old Missouri Pippin is good enough for me.

"The Jonathan is simply grand, the world now knows its worth.

And like old Alexander, it has conquered the earth.

And is destined to grow greater wherever it may go.

In our own dear Columbia, Brazil and Mexico.

In England, France and Germany, also it is sunnily grown.

It is acknowledged as a king and long will be its reign.

It has reached Japan and China and the islands of the sea."

But the old Missouri Pippin is good enough for me.

"Grimes Golden, here my hearers is as good as gold.

Bright as a golden nugget and you hardly need to be told.

That to plant this golden beauty insures to you good health.

Will prove in outcome really a mine of wealth.

Will prove in outcome, as sure as time rolls on.

As good as zinc in Ozarks or gold in the Yukon.

And you'll bless the day you planted this peerless apple tree."

But the old Missouri Pippin is good enough for me.

I never yet in all my life have seen so glib a man.

Half of the apples that he named I know I never can.

For he mentioned every apple that grew beneath the sun.

And if a single one escaped, I'd like to know the one.

He had a word of praise for all, and claimed that each was best.

Except a rosy red-checked beauty, the peer of all the rest.

But how they all can be the best I really cannot see.

The old Missouri Pippin is good enough for me.

—Written for Green's Fruit Grower by George Clay Lloyd.

MORTICULTURAL TALKS.

BERRY NOTES.—The strawberry crop was not so large as was expected; perhaps only one-half what it should have been.

The fruit was generally very good and sold readily at from \$1.75 to \$2.50 per 16-quart case. Few were bought for putting up, and that means a good price for raspberries, notwithstanding the fact that there will be a big crop.

The best late strawberries are Mid-nights, Hunt, Nettie, Joe, Benjamin and Miller. All of these produced a good picking of fine, large berries at this date; and it would really be a hard matter to decide which of them deserves first place. They are all very profitable this year and ought to be planted in small plots at least one week. They will be planted largely at my place.

Now is the time to pot strawberry plants. Set the runners in small pots filled with earth; the pots being buried in the ground.

When the pots are filled with a mass of roots, remove them, cut off the runners and remove the potted plants when wanted. This method is very satisfactory, as the roots not being disturbed in transplanting, the plants are sure to grow and do well.

The raspberry crop in this vicinity will be very large, and with the exception of a few old, run-down patches, the fruit will be good.

The Cumberland is showing up as favorably as ever, and will surely crowd out the Kansas. Evans is a very promising, early berry; ripens early and all at once. Like it better than any other for an early berry. Blackberries will be scarce and poor as a rule. A few growers in this neighborhood are harvesting a fine crop of gooseberries, which sell from \$1 to \$1.50 per acre. This gives the grower a fair profit, considering that they can be gathered more cheaply than other berries and that they do not have to be gathered at a certain time.

Houghton and Downing are the varieties mostly grown. Pearl is much larger than either of them, and very productive. Sure to become a great favorite.

Red Jacket is one of the best very large varieties.

A NEW INSECT.—If that insect which is devouring the foliage of the Carolina Poplar this year has come to stay, the Poplar will lose its popularity. It is a beetle of the lady-bug type. Some relation to the melon-bug which it resembles.

WHAT SHALL WE DO?—Dig our potatoes now at \$1 per bushel, or let them increase in yield to one-third more, and run chances of the price dropping in the meantime to 50c.

THE WEATHER.—On June 7 we were visited by a terrible rain and hailstorm which did much damage to crops in general.

Land was flooded and badly washed. The fruit and vegetables were particularly damaged. Too bad that we must have just the reverse from last season; though perhaps we will have it dry enough yet before fall. All crops are growing finely and everything in the vegetable line is, and promises to be, dirt cheap.

Lots of hard work and little profit for the tiller of the soil.

EDWIN H. RIMMEL.
North Alton, Ill., June 9, 1902.

HORTICULTURE AT THE WORLD'S FAIR.

In a circular issued by the Department of Horticulture of the St. Louis World's Fair, Acting Chief Frederic W. Taylor says that no class of exhibitors will be more benefited by the postponement of the Fair to 1904 than those who will make the outdoor horticultural exhibits. The great area of the grounds and their beautiful contour will furnish by far the best setting for outdoor exhibits of trees, shrubs and plants ever given by an exposition. Mr. Taylor says:

"There are exposures in every direction, as well as considerable stretches of level ground, giving locations to meet every requirement.

"In cases where for special reasons planting should be made in the fall of 1902, every effort will be made by the Department to meet the requirements.

"For the spring of 1903 it is expected that everything will be in readiness for all the planting that should be made at that time. This will include practically all trees and shrubs, as well as many of the hardy perennials.

"Planting at that time will insure thorough establishment. Every facility in the way of soil, abundant water, etc., will be provided, and an earnest effort made to render every needed assistance by the management.

"In due time special rules will be issued covering this class of exhibits, but in the meantime the following general observations may be made.

"Exhibitors will be expected to deliver all stock, which has been accepted for exhibit, at the Exposition grounds, all charges paid. This Department will, when desired, receive, unbox, plant and care for all such exhibits, or should the exhibitor prefer, he may retain charge of the planting and care of his exhibit. In all cases the exhibitor, as well as the persons in charge of them, will be under the jurisdiction of the Chief of the Department of Horticulture, and subject to such rules and regulations as may be from time to time promulgated.

"The Department of Horticulture will maintain a sufficient corps of competent gardeners and workmen to give proper care to all outdoor exhibits.

"The early spring at St. Louis, as well as the long summer, supply an ideal opportunity to display to the best possible advantage all this great class of decorative and ornamental trees and plants, and it is sincerely hoped that the nurserymen of the country will do their part toward bringing about the splendid results that may be expected.

Mr. Taylor expects to attend the annual meeting of the American Association of Nurserymen at Milwaukee, Wis., and will address the association on "The Nursery Interests at the St. Louis World's Fair."

ILLINOIS FRUIT GROWERS.

The fruit growers of Jersey county have recently organized the Jersey County Fruit Growers' Association with the following officers: W. E. Carlin, President; Dr. A. K. Van Home, Vice President; Isaac D. Snedeker, Secretary; J. H. Bowman, Treasurer. Directors: Judge O. B. Hamilton, A. F. Pitt, C. W. H. Fulkerson, R. P. Shackelford, Wm. L. Scott, John Fleming, C. W. Simmons, L. P. Squire, S. L. Massey.

The members own about 600 acres of commercial orchards and are enlarging the area each year. They have sprayed thoroughly and generally cultivated. Apples and peaches are thus far free from any damage by codling moth and canker worm, and the prospect is good for six to eight thousand barrels of choice fruit. No peaches this year. Farmers orchards that have not been sprayed are to a large extent devastated by canker worms; the same is true of a large proportion of the extensive orchards of Calhoun county, which has in the past furnished so many good apples; it is expected their crop will be short, and not the best quality, except in those orchards that have been sprayed.

Ben Davis and Missouri Pippin and Winesap are the leading varieties with a fair prospect for Maiden Blush, Keifer and Duchess pears are the leading varieties, with some Howell.

The Alton Horticultural Society, which embraces Madison, Jersey and Macoupin counties, will hold its September meeting in Jerseyville, where, if present prospects hold good, a fine display of fruit will be exhibited.

WHY WAR ON BIRDS?

The farmer sows in order that he may reap an increased measure of what he has sown. In doing this he must first turn over the soil. This destroys many existing plants, as well as animals that depended upon them for food. The plants thus turned down cannot regain their position and must of necessity die, says "Green's Fruit Grower." Not so with many of the animals, however, which soon work their way to the surface. Some of these attack the growing plants, which have been made to occupy the place of those destroyed by the plow. Others take wing and seek suitable food in adjoining districts, where they add to the numbers already drawing upon the vegetation up to the point of possible continued supply. Here then, the scales begin to vibrate. In the field the new and tender crop anticipates the ever-shifting individuals of myriads of forms that have been crowded out elsewhere. The result here, too, is, or would be, very disastrous were it not for the timely visit of flocks of birds likewise in search of food.

A STRAWBERRY PEST.

For many years strawberry growers have felt that they have been comparatively free from pests which infest the strawberry. This has not been a problem. If one were to take the trouble he could go through after the first swarm has gone off and out and destroy the remaining cells, first being sure that one young queen has escaped and is somewhere in the hive. She will be hard to find unless she has mated, when she will be distinguished by her length and by the guard around her, and if an Italian will be found certainly in the brood chamber, but if an ordinary black bee she may be found outside of it. There will then be no danger of a swarm at least for some time. A better way is to wait until the swarm has been hived, then pick up the old hive and set it in a new place, say ten or fifteen feet away and put the new swarm in the old place. The old bees were out working long enough to come back to the old stand and go into whatever hive may be there. Even if it were a strange hive there would be accepted because evidently honest folks hard at work and bringing in honey. They will make the new hive

It is not profitable to have more than one swarm from a live during the year. Just how to avoid it is a problem. If one were to take the trouble he could go through after the first swarm has gone off and out and destroy the remaining cells, first being sure that one young queen has escaped and is somewhere in the hive. She will be hard to find unless she has mated, when she will be distinguished by her length and by the guard around her, and if an Italian will be found certainly in the brood chamber, but if an ordinary black bee she may be found outside of it. There will then be no danger of a swarm at least for some time. A better way is to wait until the swarm has been hived, then pick up the old hive and set it in a new place, say ten or fifteen feet away and put the new swarm in the old place. The old bees were out working long enough to come back to the old stand and go into whatever hive may be there. Even if it were a strange hive there would be accepted because evidently honest folks hard at work and bringing in honey. They will make the new hive

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sprayed on the plants twice or three times during the period when this pest is at work. If the larvae persist in working to within two weeks of fruiting season it is not safe to employ this remedy. In this case it will be well to use white hellebore in a solution of one ounce to three gallons of water. It is just as efficient as Paris green, though not so poisonous to man. The latter drug is much more expensive than the former.—Ex.

HOW TO KILL RED AND BLACK ANTS.

Ants, the large red and black varieties which burrow into the ground, may be killed comparatively easily by the use of carbon bisulphide, a liquid chemical of a peculiar, disagreeable odor. To be entirely successful, however, the habits of the ants must be taken into consideration. Immediately after a rain is the accepted time to attempt their destruction, for it is then that the ants are very active, bringing out into the sun to be dried any of their stored up food supply which may have become damp. A half teaspoonful—more if the nest is a very large one—of the carbon bisulphide poured into the nest at this time will usually accomplish the result. The ground being damp and cool is also another decided advantage in that it prevents the too rapid absorption or volatilization of the carbon bisulphide; consequently a less quantity of the chemical is required.

A word of caution in the use of the carbon bisulphide is deemed necessary. It must at all times be borne in mind that the substance is highly inflammable and under certain conditions explosive. Matches, pipes, etc., are to be left at home when this chemical is to be used. The carbon bisulphide can be procured from any druggist and costs here in Tucson 50 cents per pound, but can be bought for much less, wholesale. It is probable that the use of this remedy is not practicable on a very large scale, owing to the cost of material, but it frequently happens that these ants select for their home, from our point of view, most undesirable places, such as public walks, or near one's door. In such cases a sure means of eradicating them is by means of knowing—W. W. Skinner, Arizona Agricultural Experiment Station.

AN IMPERFECTLY PERFECT STRAWBERRY.

I believe I have noticed in "American Gardening" that you have an experimental strawberry plantation. At least, I presume you will be interested in any new departure in the sexual character of the plant and take the liberty of sending you a few flower stems of a strawberry plant that bears on the same plant and frequently on the same stem or flower stem both staminate and pistillate flowers; that is, there are some decidedly staminate, full, perfect flowers, others only partially staminate, having stamens, shorter and imperfectly developed; then some decidedly pistillate without any visible stamens.

The plant, so far as I know, is an original seedling that was noticed by me several years ago on account of peculiarities other than the bloom; growth strong; tall leaf stalks and small leaves. The flowers are quite long, so that the flowers may be quite above the foliage. The berry is of medium size, quite late, even later than Glendale.

If interested in this I will be pleased to give you further test of some of the fruit. I have only a few plants, but will have some to show the true character of the fruit. I think, writes E. L. Ryder in "American Gardening," to which the editor replies as follows:

The presence of stamens in a transitional condition from one stage to another is not to be wondered at. In many plants of the Rose family especially (in which the strawberry also belongs), there may be seen frequently, of course, with any change in character of the stamens it is more than likely that such a change is produced gradually, and therefore the presence of perfect and imperfect flowers on one and the same plant is but a natural sequence.

We do not positively recall having noticed the fact before, but then we cannot say that we have ever looked for it. Perhaps some of our strawberry growers will have something to advance in this connection.

The RURAL WORLD received a pleasant call from Mr. James Handly, Secretary of the Mississippi Valley Apple Growers' Association, Quincy, Ill.

Mr. Stinson, of the State Horticultural Experiment Station, called on Tuesday on his way to attend the meeting of the State Horticultural Association at Eldon, Mo.

The Apiary

THE EVILS OF OVER-SWARMING.

In order to manage bees successfully it is necessary to control the swarms. When the season has been favorable and room abundant a strong hive is very likely to over swarm, that is after sending out the first swarm to send another in a week or ten days and others at intervals of two or three days until the hive is so depleted in population that it does not store much honey during the rest of the year, says "Wallace's Farmer." It is not infrequently happens that in the strife among the queens of the larger swarms that all are killed and there are no fresh eggs left and then the hive becomes queenless until a queen is replaced by the keeper. When a hive becomes queenless and there are no fresh eggs they cease to work. They seem to know that certain danger awaits them. They eat up what stores they have and perish.

It is not profitable to have a rule to have more than one swarm from a live during the year. Just how to avoid it is a problem. If one were to take the trouble he could go through after the first swarm has gone off and out and destroy the remaining cells, first being sure that one young queen has escaped and is somewhere in the hive. She will be hard to find unless she has mated, when she will be distinguished by her length and by the guard around her, and if an Italian will be found certainly in the brood chamber, but if an ordinary black bee she may be found outside of it. There will then be no danger of a swarm at least for some time. A better way is to wait until the swarm has been hived, then pick up the old hive and set it in a new place, say ten or fifteen feet away and put the new swarm in the old place. The old bees were out working long enough to come back to the old stand and go into whatever hive may be there. Even if it were a strange hive there would be accepted because evidently honest folks hard at work and bringing in honey. They will make the new hive

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COLUMBUS, C. C. Vail, 114 E. Town street, Columbus, O.
DENVER—L. L. Melcher, 1530 Market street, Denver, Colo.
DETROIT—John D. Wiley, 20 Woodbridge street, Detroit, Mich.
INDIANAPOLIS—B. F. Hiss, 29 South Delaware street, Indianapolis.
KANSAS CITY—Charles G. Haines, 112 W. Fourth street, Kansas City, Mo.
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Live Stock

DATE CLAIMS FOR LIVE STOCK SALES.

POLAND-CHINAS.
Oct. 20—E. E. A. and Oak Grove, Mo.
BERKSHIRES.
Aug. 6—A. J. Lovejoy & Son, Roscoe, Ill.
ABERDEEN-ANGUS CATTLE.
Aug. 6, 1902—Berkshires; A. J. Lovejoy & Son, Roscoe, Ill.
Aug. 8, 1902—Combination sale, Kansas City, Mo.
Sept. 2, 1902—L. M. Monesse & Son, Smithton, Mo. Registered saddle and harness horses, Registered Shorthorns and Poland China Hogs.
Sept. 17, 1902—Combination State Fair sale, Indianapolis, Ind.
Oct. 1, 1902—Combination State Fair sale, Springfield, Ill.
Oct. 22, 1902—Combination Hog Show sale, Kansas City, Mo.
Nov. 6, 1902—Combination sale, East St. Louis, Ill.; Manager, C. H. C. Anderson, Carlinville, Ill.
NATIONAL SHORTHORN SHOWS AND SALES.
October 22, 1902—Geo. W. Jessup, Rockville, Ind.; Charles F. Miller, Clerk, Springfield, Ill.
Oct. 31—J. C. Hall, Hallsville, Mo., sale at Centralia, Mo.
Nov. 11—J. L. Little, E. S. Stewart, Dr. J. F. Keith and J. H. Cottingham, at Sturgeon, Mo.
Dec. 8, 1902—Combination sale Berkshires, Manager A. J. Lovejoy, Roscoe, Ill.; Clerk, Charles F. Miller, Springfield, Ill.

THE TUBERCULIN TEST FOR TUBERCULOSIS.

Cattle owners, and especially those in the dairy business, were much alarmed when the investigation of Professor Koch on the subject of bovine tuberculosis was first mooted, and his conclusions were not only widely disputed, but in many places, St. Louis among them, the efforts to apply the tuberculin test to dairy cows were successfully resisted on the part of the owners, and state and city officials were denied admission to make the tests necessary to affirm or refute the conclusions arrived at by Koch. There was a widespread impression that tuberculosis was not so prevalent as was stated to be the case, and that the test proposed to be applied to locate it was only a scientific "fad." Dr. A. M. S. Brown, of the University of Illinois, who was proved to exist, would necessitate their slaughter without any, or at best, inadequate remuneration. It was also asserted that the test was not a reliable application of the test. The tuberculin test came into existence through the most careful and thorough scientific experimentation. It is applied by taking the temperature of the animal at intervals of about two hours a sufficient number of times to establish the normal temperature under ordinary conditions. The dose of tuberculin is then injected under the skin with a hypodermic syringe, generally late in the evening, and the temperature is taken every two hours the following day until late in the evening if fullest information is desired. From lengthened experience it is found that the general rise of temperature begins from five to six hours after injection of the tuberculin, reaches its greatest height from the sixteenth to the twentieth hour, and thence, declining, reaches the normal again in the twenty-eighth hour. While it may be said that the tuberculin test is not absolutely infallible, it is by far the best method of diagnosing tuberculosis that has yet been discovered.

While the results of experimentation with tuberculin has not entirely convinced those most likely to be affected by its use—cattle and dairymen—the conclusions arrived at are certainly reassuring on many points, and the issue of the Bulletin on "The Tuberculin Test for Tuberculosis," by Dr. D. E. Salmon, chief of the Bureau of Animal Industry, will serve to dispel much of the doubt and misgivings which were entertained as to its effects, especially upon breeding animals. The following are the general conclusions arrived at regarding its use:

"Those who have had most experience with tuberculin have, consequently, failed to observe any injurious effects following its use upon healthy cattle. With tuberculous cattle it produces a fever of short duration, and in the great majority of cases all derangement of the system which it causes disappears within forty-eight hours after the tuberculin is administered. There appear to have been a very few cases in which the disease was aggravated, and a greater number in which it was benefited by the injection of tuberculin. The cases of abortion following the tuberculin test have not been numerous, even when cows were tested within a few weeks of the normal time of calving. In a few cases of abortion which have occurred may be explained by the fact that abortion in cattle is a very common occurrence, and that it would inevitably happen sometimes after the tuberculin test was a mere coincidence, and without any relation between the test and the loss of the calf. The cases of abortion which have been cited appear to be no more numerous than might be expected to have occurred among the same number of cattle within the same period if the test had not been applied.

"From the investigations and observations that have been mentioned, it may be safely concluded:

"1. That the tuberculin test is a wonderfully accurate method of determining if an animal is affected with tuberculosis.

"2. That by the use of tuberculin the animals diseased with tuberculosis may be detected and removed from the herd, thereby eradicating the disease.

"3. That tuberculin has no injurious effect upon healthy cattle.

"4. That the comparatively small number of cattle which have aborted, suffered in health or fallen off in condition after the tuberculin test, were either diseased before the test was made or were affected by some cause other than the tuberculin."

SPAYING HEIFERS.

In response to an inquiry by H. C. H. in the RURAL WORLD, we have received a communication from Dr. T. E. White of Sedalia, Mo., former State Veterinarian, on "spaying heifers," which we print below:

The operation of spaying is theoretically very simple; the mortality in the perfectly healthy and vigorous animal (one free from all infectious and contagious diseases, such as actinomycosis (big jaw), tuberculosis (lumpy jaw), scrofula, etc.) should not be over half of one per cent. Of course this is supposing that the surgeon performing the operation is thoroughly posted on antiseptic surgery and is careful to carry out this knowledge in every little detail.

To get ready for the work a chute is made alongside of a strong plank fence by taking the large farm gate off its hinges and attaching it, by ropes for hinges, to a post set about eighteen inches, more or less, from the fence. When the animal is led into the chute the gate is used to push her over close to the fence in order that she may be tied securely and firmly for the operation. First confine the head to the fence, either by means of a halter or a leading bull ring in the nose. She is then tied to the fence with a rope placed just back of the shoulder and another thrown over the rump and hauled back; this leaves the flank unobstructed for the operation. A good razor (not hollow ground) makes an excellent knife for the work. When you are satisfied that the ropes are firmly secured make a perpendicular incision five inches long through the skin only, commencing one inch below the transverse bones of the lumbar or kidney region and about equal distance from the hunch bone and rib. The skin being cut, tear the transverse muscles of the flank apart, with the fingers, to make an opening just large enough to admit the two or three struts now to be used to puncture with the point of a knife; this part of the operation requires care, but there is danger of puncturing an intestine.

To hunt for the ovaries insert your hand and arm, well oiled, into the incision, and where anterior to the kidneys on each side of the back they will be found suspended by one artery and two veins; the other end is connected to the horn of the uterus or womb by the fallopian tubes. It is advisable to amputate the furthestmost ovary first; this is done either with an exciser or spaying shears, after both are cut, you can withdraw your hand with both ovaries in it; should one drop out into the abdomen it will do no harm, but it is, of course, preferable to have them both out and to know that they are the ovaries and not some other tissue. Neither peritonitis nor shock is to be feared, but two or three stitches through the hide are all that is necessary to protect the wound against dust or other septic material. As septicize the wound with carbolic oil—one to ten—and keep looking after it every third day until the skin has well and firmly united; the stitches can then be cut and withdrawn.

Some veterinarians operate on the right side, while others prefer the left; by operating on the right side the large paunch is out of the way and there are only the small intestines to contend with. The surgeon is greatly assisted in the operation if the animal has been kept away from all feed for at least eighteen hours. Feed sparingly for a few days after the operation, and it may also be mentioned that the quieter the animal is kept, both before and after, the less danger there is of surgical fever. Spayed cattle do much better in the feed lot than open ones. Spaying cows for dairy purposes has proven, time and again, to be a fallacy.

INFLUENCES AFFECTING THE ECONOMIC PRODUCTION OF BEEF.
Andrew M. Soule.

(An address before the Minnesota State Society, Jan. 15, 1902.)
The present age is one of keenest competition. At the recent exposition in Chicago there were often 40 or 50 animals entered in a single class. Mr. Peters, the distinguished English judge, said of a sweepstakes competition, that "it was unfortunate that three animals of such remarkable excellence should have to compete for a single ribbon." Competition is a good thing. It makes men strive to excel; it makes men think; it sets up high standards and engenders a friendly rivalry that makes for progress.

In the present age success can only come to the patient and industrious feeder and breeder. He who hopes to win must keep abreast of the times. He must watch the changing fashions which vary with the coming and going of the seasons in animal production almost as strangely as the customs of the people. Stock feeding is a business—serious business. It means the economic manufacture of vast quantities of raw products. It requires skilled workers, for are they not battling to improve an organized creature whose physiological functions we understand only in the vaguest way? Stock feeding is an exact science, and so calls out all that is best in man. It will never become an exact science because of the variation in the composition of foodstuffs, individuality of the animals, and the influence of drought which makes one form of food abundant one year and scarce the next. One year the feeder can use an apparently wasteful ration, while the next year he must employ all his skill in combining foods so as to get the very largest production at the least cost.

AIM HIGH.
An old saying, a worthy one, and just as true to-day as it ever was. It pays to have the best. Whoever hopes to be in the vanguard of the cattle business must choose this sentiment for his motto. The truth of the saying was shown by the sale price of cattle at the recent fat stock show in Chicago. Just think of a cow selling for \$6,000, another one for \$4,500 and a Galloway bull for \$2,000. Sixty-nine Shorthorns sold for an average of \$394, 16 Herefords for an average of \$380, and 96 Galloways for an average of \$244. What a splendid thing for the men who had such animals to sell, yet the way to the top is open if a man is industrious, conscientious and uses good business judgment in his breeding operations.

The younger the animal the more rapid the gain. Experimental data shows that a calf under five months will make about two pounds of gain per day on 10 pounds of skim milk. After that period it will require about double the amount of food for a similar gain.

The daily gain of a large number of animals slaughtered at the famous Smithfield Fat Stock Show at London, England, averaged two pounds for yearlings, 1.75 pounds for two-year-olds and 1.58 pounds for three-year-olds. These results practically coincide with those of the American fat stock shows, and demonstrate the importance of having good animals, of pushing and developing them uniformly from birth. According to feeding trials at a number of stations the cost of making 100 pounds of gain on animals under one year old is \$3.45; one year old and under two, \$2.42; two years old and under three, \$1.50. It is evident that after two years of age about one-quarter less daily gain is made at a cost of more than three times as much for food.

Taking the case of a number of carloads of range cattle fed for some ten months, and sold in Chicago in December, the following interesting results are observed:

It is observed that the two-year-olds sold at the highest price, made the highest profit per head, and were practically of the same live weight at the three-year-olds. Besides the higher profit made on these cattle, a year's time was saved, which would represent in most instances the feeder's profit. At present one-year-old range cattle cannot be marketed so profitably as two-year-olds, but the example shows the important relation of age to profit.

UNIFORM GROWTH IMPORTANT.
It seems that good, average animals should gain about one and one-half pounds per day up to one year, or 1,065 days. At that rate of gain an animal should weigh 1,065 pounds. The weight of three-year-old native steers of the poorest type would be from 700 to 800 pounds. These animals will gain about .75 pounds a day, or a gain of 90 pounds in live weight in 120 days. The marketable weight at the end of the feeding period would then be about 900 pounds. The best of our native steers brought in off the range when they are thin and poor will gain as high as 1.50 to 1.75 pounds per day. If fed for 120 days when gaining at the rate of 1.50 pounds per day they would put on 180 pounds of weight, and as they would weigh about 700 to 1,000 pounds when coming off the range, they would finish at about 1,100 to 1,200 pounds. They would then weigh 50 pounds less than an animal of better quality that had been fed and kept growing uniformly from the start. The one class of animals would bring 5 to 7 cents on the market, while the other would not bring more than 5 cents. These results are based on experimental data collected by the writer, and show that the best native animals would be worth 50¢; the high grade steer, 55¢, or a difference of 5¢ in favor of the animal fed and kept growing uniformly from the start.

These conditions explain why so many people find stock feeding unsatisfactory. Of course, it is not practicable to high pressure feed cattle on the range, but they could often be supplied with forage where they are now neglected and allowed to become stunted. On an average farm, animals are often treated very much as if they were under range conditions and there is certainly no excuse for such management.

Whenever feasible the farmer should grow his own stock. The men who win the highest premiums at Chicago try to grow their own stock as far as possible. Many of the best feeders in the country now own ranches in the southwest and have their feeding lots and grain-producing farms in Iowa, Illinois and other states contiguous to Chicago. What the farmer needs to do is to use the waste products of his farm in the production of beef stock. The farmer needs to have many to sell; that is the way to make money. The large increase in stock indicated by the last census shows that it was chiefly on the small farms, and this will be essentially true in the future. In the past, because the range land is now well occupied and the future demand will be for animals of higher and better quality. One way in which we

SHOWING GOOD DEVELOPMENT IN THE HIND QUARTERS.

sonal sacrifice for the benefit of his animal. He must understand the functions of the animal organs and how to supply their physiological needs to the best advantage. How can he hope to succeed otherwise? One without experience would hardly hope to aspire to engineer an electric motor though it would be just as reasonable for him to do so as to attempt to feed and breed stock when he has neither studied animal life, the conditions which surround the business and has no interest in such matters. The inborn love for animals which seems to have such a warm place in the hearts of all Scotchmen probably accounts more for their success as feeders and breeders than anything else.

THE AGE OF ANIMALS IMPORTANT.

The age of animals has an important bearing on the economic production of



A DAM SHOWING THE BEEF FORM.



BABY BEEF OF PRIME QUALITY.

farmer can help himself also is to have more calves of beef quality and not have to knock so many in the head.

SLAUGHTER TESTS.

Some very interesting facts are brought out by the recent tests at Chicago. It would seem from those results that it was hard to win on the hoof and in the slaughter tests as well. In order to win on the hoof it is important that animals have the best handling qualities, and in order to get these it is necessary to feed for more fat than is desirable when the animals are slaughtered. In feeding for high finish and handling qualities in the show ring, a wide ration and one consisting largely of corn seems to have generally given the best results. But in feeding for the slaughter tests it is necessary to have a better marbling of the meat—that is, a higher admixture of the fat and lean, which means the employment of a narrower ration or one richer in protein. The aggressive use of corn is inclined to produce an overripe fat, which the butcher does not want. The animal in demand is one that will produce the highest amount of firm flesh from the parts of the body from which the choicest cuts are obtained. Without roughness and without surplus fat. It was established long ago that the nature of the ration had a discernible influence on the various body tissues, and so the man who hopes to produce animals that will bring the highest prices in the open market for packing purposes must be governed accordingly.

While the slaughter tests are in favor of baby beef the two-year-olds would

be more profitable, according to the following statements:

Age.	Live weight.	Slaughter weight.	Per cent of dressed meat.
Yearlings.....	1,175	742.8	63.25
Two-year-olds.....	1,559	994.2	63.76

The two-year-olds weighed 384 pounds more than the one-year-olds, and dressed 254 pounds more. The average per cent of dressed meat of all the grade animals exhibited was 64.08, the rough fat 7.75, and the per cent of hides 6.91. In the case of all the pure breeds the per cent of dressed meat was 63.32, and of rough fat 7.91. These figures cover 51 carcasses and indicate that the high grade is quite as good as the pure bred for carcasses on the average.

The splendid showing made by the grades ought to encourage the average farmer to engage in the fattening of animals more extensively. There are 1-89,000 head of cattle of all classes in Minnesota. By the first cross of a pure-bred sire on our native stock the slaughter test has been increased 8 per cent, which would give the majority of the animals owned in the state an increased slaughter value of 171,000 pounds, amounting at 3 cents a pound to \$5,130,000. Surely these figures are worth the serious consideration of stockmen.

Some interesting slaughter tests have been made at the Tennessee State Fair with native stock when fed on dry and succulent food. Those animals fed on dry rations showed an average slaughter test of 53.4 per cent; on succulent rations, 55.7 per cent, a difference of about one per cent. It has been held that the succulent ration was unsatisfactory for beef production owing to the large amount of water that would be incorporated in the tissues, but the contention has not been sustained by our experiments, and the importance and utility of ensilage in beef production ought to be more generally recognized.

(To Be Continued.)

SCABIES (MANGE) IN CATTLE.

Scabies, or mange, is a troublesome skin disease which has prevailed to a great extent among the range cattle of the west and northwest, and frequent inquiries are made for instruction as to its treatment. It is a contagious disease by a parasite insect, of which there are two varieties—the class Arachnides. The first one called Psoroptes, the second the Symbiotes. The first is the one which most frequently affects cattle. It lives on the surface of the skin and gives rise to great irritation and itching by biting, and is most frequently upon the sides of the neck and shoulders, at the base of the horns and at the root of the tail. From these points it spreads and may invade the whole body. It is evidenced by pimples, exudation and scaling off of the skin, falling out of the hair and the formation of dry, brownish scabs, and in time the skin becomes dry, thick and of a leathery consistency. As the disease develops the animals lose flesh and become weak and anemic, rendering them constitutionally unable to withstand or combat the ravages of the mites, and the mites multiply as their victim weakens.

Scabies do not seem to affect cattle while they are doing well on grass, nor attack those in good condition over three years old. Calves, yearlings and two-year-olds in poor condition suffer most. The other variety of this parasite which produces mange in cattle is the symbiotes, which cause scaly or tall mange. While generally located on the back part of the croup and at the base of the tail, it may, if neglected, extend over the whole body, and is a very effective against scabies is also good for tall mange.

Mange is never developed except by contagion. Contamination takes place either by direct contact—that is, immediately, as on pasture, at the stable, etc., or by intermediary agents.

The treatment for scabies and mange will be familiar to most farmers interested in sheep husbandry, as treatment is essentially the same as that for scab in sheep. The animals are dipped in a compound of flowers of sulphur and unslacked lime. The proportions for dip, as well as the whole of the information as to the mode of procedure are given in Farmers' Bulletin No. 142, just issued by the Department of Agriculture, and will be sent to any one asking for it at the Bureau of Publication, Washington, D. C.

ST. LOUIS NATIONAL STOCK YARDS.

Market Report Furnished by Evans-Southerland Company.

CATTLE—Native receipts about same as last week, including several droves of good to choice, which sold from \$7.50 to \$7.75. Demand for good, thick, fat cattle strong, and prices 10c to 15c higher; medium to good kinds barely steady; common grades, 15c to 20c lower than last week. Receipts of cow and heifer butcher stock light, including very few good, and none strictly choice or fancy. Best grades ruled strong and demand good; common very slow sale. Choice native heifers sold at \$5.00 to \$5.50; good, 4.50 to 5.00; fair, 4.00 to 4.50; poor, 3.50 to 4.00. Steers, 1,200 to 1,500 pounds average, full range, rough to best, \$6.00 to \$6.50. Steers, 1,000 to 1,100 pounds average, full range, \$4.50 to \$5.00; bulk of sales at \$4.00 to \$4.50. Steers weighing less than 1,000 pounds, full range, \$4.00 to \$4.50; bulk sold at \$3.50 to \$4.00. Feeding steers, fair to choice, 300 pounds and upwards, \$4.00 to \$4.50. The bulk of all the cows sold at \$3.50 to \$4.00. Canning cows sold at \$2.00 to \$2.50. Very few calves, \$3.00 to \$3.50; bulk sold at \$2.50 to \$3.00. Steers, full range, \$2.75 to \$3.00; bulk of sales, \$2.50 to \$2.75. Stocker bulls, full range, \$2.50 to \$3.00; bulk sold at \$2.25 to \$2.50. During the week the milkers sold at a full range of \$16.00 to \$18.00.

It is observed that the two-year-olds sold at the highest price, made the highest profit per head, and were practically of the same live weight at the three-year-olds. Besides the higher profit made on these cattle, a year's time was saved, which would represent in most instances the feeder's profit. At present one-year-old range cattle cannot be marketed so profitably as two-year-olds, but the example shows the important relation of age to profit.

UNIFORM GROWTH IMPORTANT.
It seems that good, average animals should gain about one and one-half pounds per day up to one year, or 1,065 days. At that rate of gain an animal should weigh 1,065 pounds. The weight of three-year-old native steers of the poorest type would be from 700 to 800 pounds. These animals will gain about .75 pounds a day, or a gain of 90 pounds in live weight in 120 days. The marketable weight at the end of the feeding period would then be about 900 pounds. The best of our native steers brought in off the range when they are thin and poor will gain as high as 1.50 to 1.75 pounds per day. If fed for 120 days when gaining at the rate of 1.50 pounds per day they would put on 180 pounds of weight, and as they would weigh about 700 to 1,000 pounds when coming off the range, they would finish at about 1,100 to 1,200 pounds. They would then weigh 50 pounds less than an animal of better quality that had been fed and kept growing uniformly from the start. The one class of animals would bring 5 to 7 cents on the market, while the other would not bring more than 5 cents. These results are based on experimental data collected by the writer, and show that the best native animals would be worth 50¢; the high grade steer, 55¢, or a difference of 5¢ in favor of the animal fed and kept growing uniformly from the start.

These conditions explain why so many people find stock feeding unsatisfactory. Of course, it is not practicable to high pressure feed cattle on the range, but they could often be supplied with forage where they are now neglected and allowed to become stunted. On an average farm, animals are often treated very much as if they were under range conditions and there is certainly no excuse for such management.

Whenever feasible the farmer should grow his own stock. The men who win the highest premiums at Chicago try to grow their own stock as far as possible. Many of the best feeders in the country now own ranches in the southwest and have their feeding lots and grain-producing farms in Iowa, Illinois and other states contiguous to Chicago. What the farmer needs to do is to use the waste products of his farm in the production of beef stock. The farmer needs to have many to sell; that is the way to make money. The large increase in stock indicated by the last census shows that it was chiefly on the small farms, and this will be essentially true in the future. In the past, because the range land is now well occupied and the future demand will be for animals of higher and better quality. One way in which we

(To Be Continued.)

SCABIES (MANGE) IN CATTLE.

Scabies, or mange, is a troublesome skin disease which has prevailed to a great extent among the range cattle of the west and northwest, and frequent inquiries are made for instruction as to its treatment. It is a contagious disease by a parasite insect, of which there are two varieties—the class Arachnides. The first one called Psoroptes, the second the Symbiotes. The first is the one which most frequently affects cattle. It lives on the surface of the skin and gives rise to great irritation and itching by biting, and is most frequently upon the sides of the neck and shoulders, at the base of the horns and at the root of the tail. From these points it spreads and may invade the whole body. It is evidenced by pimples, exudation and scaling off of the skin, falling out of the hair and the formation of dry, brownish scabs, and in time the skin becomes dry, thick and of a leathery consistency. As the disease develops the animals lose flesh and become weak and anemic, rendering them constitutionally unable to withstand or combat the ravages of the mites, and the mites multiply as their victim weakens.

Scabies do not seem to affect cattle while they are doing well on grass, nor attack those in good condition over three years old. Calves, yearlings and two-year-olds in poor condition suffer most. The other variety of this parasite which produces mange in cattle is the symbiotes, which cause scaly or tall mange. While generally located on the back part of the croup and at the base of the tail, it may, if neglected, extend over the whole body, and is a very effective against scabies is also good for tall mange.

Mange is never developed except by contagion. Contamination takes place either by direct contact—that is, immediately, as on pasture, at the stable, etc., or by intermediary agents.

The treatment for scabies and mange will be familiar to most farmers interested in sheep husbandry, as treatment is essentially the same as that for scab in sheep. The animals are dipped in a compound of flowers of sulphur and unslacked lime. The proportions for dip, as well as the whole of the information as to the mode of procedure are given in Farmers' Bulletin No. 142, just issued by the Department of Agriculture, and will be sent to any one asking for it at the Bureau of Publication, Washington, D. C.

ST. LOUIS NATIONAL STOCK YARDS.

Market Report Furnished by Evans-Southerland Company.

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Pasteur Blackleg Vaccine ready for use.
Single Blackleg (for common stock): No. 1 (10 doses) \$1.50; No. 2 (20 doses) \$2.50; No. 3 (50 doses) \$5.00. Double Blackleg (for choice stock) \$2.00 for 10 doses, first lymph and second lymph inclusive. Blackleg Outfit, for applying Blackleg vaccine, 50 cents.

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LAVENDER VISCOUNT 124755. Champion Bull Two Years in Succession. Winner of the Armour Trophy for best bull at the Kansas City show of 1900 and grand champion over all at same show, also grand champion over all at the Chicago International of 1901, heads herd owned by the Crickbank Victoria Bull Royal Hampton by Merry Hampton. Bulls and heifers for sale. C. E. LEONARD & SON, Bell Air, Cooper County, Mo. M. D. Patterson, Manager. Telegraph and shipping station, Bancroft, on Missouri Pacific Ry.

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OUR SPECIALTY—Casey Mixtures, produced by the blending of the best blood obtainable. Our aim, the best in the land!
OUR HERD BULL—Imp. Charles Steele (73369). The highest priced bull of modern times Allee's Prince (122593) (son of the great Imp. Princeton Allee); Imp. Blythe Victor (14-608); Prince of Tebo Lawn (12599) (first prize calf at great Kansas City Show of 1901).

Cattle of both sexes for sale at prices to suit all buyers. We can now spare Imp. Blythe Victor (140608) and offer a son of Imp. Mayflower 5th, together with other Scotch bulls worthy a place at the head of the good herds of the country.

Address all correspondence to E. R. MITCHELL, Clinton, Mo.

SHORTHORN BULLS FOR SALE.

Of serviceable age. All bred by the Scotch Young W. A. Harris bred bull LAVENDER DOB. BULL 12549 and out of Dr. Drake, Rose of Sharon, Young Mary and Stella Big Cows. Lavender Dorrit for sale, or exchange for Scotch bull of equal merit. Sold for no fault. Call on or address E. T. LETTON & SON, Walker, Mo.

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TWO HUNDRED HEAD FOR SALE, consisting of 40 good cows 2 years old or over, 10 3-year-old heifers bred, 40 yearling heifers and 40 bulls from 8 months to two years old. I will make VERY low prices on any of the above cattle. Write or come to see me before buying.

C. A. STANNARD, Emporia, Kan.

Registered Shorthorn Cattle

AND POLAND-CHINA HOGS.

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20 BULLS—25 YOUNG COWS

With calves at foot, good colors, Scotch-Topped Hairs, will be sold right if taken soon.

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BERKSHIRE BRED SOWS.

Bred for early farrow; also have some choice sows ready for service. All of best breeding and individual merit. Also bred Shorthorn cattle, Shropshire and Cotswold sheep. All orders filled promptly. Come and see or address J. C. H. MORRIS, Chillicothe, Mo.

NIX extra good Hereford Bulls, eight months to two years old, by Sir Garland 12294, a grandson of Garland 1910. Year calf for \$100.00. J. B. NOBLE, Ottumwa, Ill.

THE name of SAM W. COX has appeared to the 1000s of Colman's Rural World longer than any live-stock breeder in the Shorthorn Cattle, 1611 Duke of Oakley 12291 in use. Up-to-date Poland China Hogs. Eggs from Choice Plymouth Rocks. Write him again if you want anything at South Greenfield, Mo., on R. O. & P. S. branch of Price System.

ABERDEEN ANGUS.
Bred for early farrow; also have some choice sows ready for service. All of best breeding and individual

Home Circle

Written for the RURAL WORLD.
THE MIGHTY DEAD.

The mighty dead, so eloquent are they,
They move the world to smiles or tears.
The mighty dead the millions sway.
The dead are they ten thousand years.

Prophets and seers of ancient time,
Alive in words, they wisely speak;
Sometimes in prose, sometimes in rhyme,
They move us 'till our spirits quake.

—May Myrtle.

A PLEA FOR THE CHILDREN.

Editor RURAL WORLD: While I have been an interested reader of the contributions to the Home Circle, I have never ventured to enter its precincts. It has occurred to me that those of us who are mothers might give and receive inspiration from letters containing suggestions regarding the various subjects relative to the training and education of our children.

There are many subjects along these lines that should be of vital importance to all of us, among which might be mentioned proper food, clothing, recreations, associations and home school training, and I am more impressed with the fact every day that the farmer's wife has in her power to give her children more ideal surroundings than many who live in the cities and seem to have more advantages.

Farming regions in latter days, by means of free mail delivery, telephone and rapid transit facilities, are able to take advantage that makes an ideal home. It is easy to get to the man-made town and nearly always we welcome the sight of the God-made country. I wonder if we stop in our busy whirl of farm life often enough to look about us and try to appreciate all that we have in our beautiful surroundings, air and clear sunshine—trees and singing birds; if we do not we cannot properly impress the beauties of nature upon our children.

Froebel, the father of the kindergarten system, said: "Come, let us live with our children," and I would like to make that the keynote of this first attempt to enter the portals of the "Home Circle."

It is to be feared that too many mothers give more thought to their household duties than to this most precious of all duties, the training of the little ones whom God has sent to cheer us on our way, and upon whom depend the future of our country.

I wonder if we realize the importance of this sacred trust, that of training our children to continue the honor of the family name and to be the pillars of the nation's greatness?

The child is father to the man, and as we bend the tender twigs of childish aspirations and character, so will the tree be inclined to uprightness, strength and usefulness.

Never mind if one little dress is made without ruffle and the shirtwaist has no tucks. We work every day over duties which we impose upon ourselves and which if never performed will not affect the welfare of anyone. And the time spent in finishing or making that little article of dress that we could do without might well be spent in a walk with the children or in reading to the little ones or perhaps in giving a little kindergarten at home instead of too early sending the babies out from the home influences to the uncertain and often harmful associations of school life. I hope we will hear from some more mothers.

RACHEL ARMSTRONG.
St. Louis Co., Mo.

Written for the RURAL WORLD.
A DAKOTA SCENE.

We live in a beautiful country. To the north the irregular windings of the snow-capped Buttes make a picturesque scenery, while to the west old Sibley Butte seems trying to hide his head in the clouds. Really, I have fancied could I but stand on the summit of Sibley Butte I could see my old Missouri home, nearly a thousand miles away. To the south and east is one level prairie. It looks as if a ball might roll for miles without stopping. Here grass grows on the stem, and horses run out all winter without food or shelter, and they are fat; but cattle have to be driven in at night during stormy weather. Yet they can run out on the prairie most of the time through the day.

There never are any muddy roads here. We have had fine sleighing from early in the fall until late in the winter, and last winter there were 100 days of good sleighing. The thermometer falls sometimes to 40 and 50 degrees in the winter time, but usually stays around freezing.

The air is so dry you don't feel cold. There are no native trees, but some people have nice groves started. Small fruit does well wherever tried. This is a great stock country, and has proved a good agricultural country for mixed farming.

The healthfulness of this country is unexcelled; it was for health we came here, and after a short time found the climate had done what medicine had failed to do in Missouri. Our work is not too arduous, and not too much to pleasure here, and we are as happy as happy can be.

IVORINE.

Kidder Co., North Dakota.

Written for the RURAL WORLD.
PANSY'S FLOWER BEDS.

I am an interested reader of the Home Circle and find the letters all good, some, of course, better than others. As it was requested that I give a description of my flower beds, I will now do so. I have different kinds of beds, one of Cannas, one of roses, one of gladiolus and two of

\$100—REWARD—\$100.

The readers of this paper will be pleased to learn that there is at least one dreaded disease that science has been able to cure in all its stages, and that is Catarrh. Hall's Catarrh Cure is the only positive cure known to the medical fraternity. Catarrh being a constitutional disease, requires a constitutional treatment. Hall's Catarrh Cure is taken internally, acting directly upon the blood and mucous surfaces of the system, thereby destroying the foundation of the disease, and giving the patient strength by building up the constitution and assisting nature in doing its work. The proprietors have so much faith in its curative powers that they offer One Hundred Dollars for any case that it fails to cure. Send for list of testimonials.

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geraniums, and two of Marguerite carnations. My canvas bed is seven feet in diameter. For center I selected Penelope, a salmon pink; next ring is the Astoria, a yellow, the two growing about six feet tall. The next ring I have selected all deep reds, such as Chas. Henderson, America, Duke of Marlborough, Guy, etc. etc. etc. Robert Christie, Alphonse Bouvier, Mlle. Beate and Beate de Poitevine, which grows about four feet tall. For edging I have white feverfew, which, I think, will make a handsome bed if they all do well. At present they are starting to grow nicely. My gladiolus bed is a mixture of the beautiful children of the rainbow. My rose bed is a collection of tea roses, among them being the Rainbow, Golden Gate, Inconstant Beauty, Mad. Welcome, Goldilocks, Soubert and Mosella, Mad. de Watteville, La Grandeur, striped La France and Magna Charta, which no doubt, my children will be something fine. Of geraniums, one bed is round, with a pure white for center, dark red for first ring, with the salmon pink for third ring, making a total of 19 plants, but as these were only slips started during the latter part of winter they are rather small yet.

My carnation bed is a mixture of white, pink, etc., containing a dozen plants. My carnation beds are all raised from the seed saved in a hothouse; they are the best mixture to be got, and will be in bloom inside of two months, with good weather. For ferns, I have planted a variety of ferns, and I am more convenient, not needing as large a quantity, and is more easily handled, but I must be used carefully, as it is very strong. I have already used a bone fertilizer with good results, too. I almost forgot my pansy bed; it now is at its best, and I have planted it in a shady position, and the blossoms are just immense in size as well as a variety of colors. I keep the faded blossoms picked off, as it causes them to bloom more freely, as it takes more strength to mature one seed pod than several blossoms. Besides all the above mentioned beds, I have a lot of others, but as my letter is getting long I will ring off.

PANSY.

Written for the RURAL WORLD.
MADISON CO. (ILL.) LETTER.

Twenty-nine years is a long time to look forward to, but a short time looking back. I sit here to-night just as we did twenty-nine years ago next August—just the doctor and I—my children are all gone. Of course we have our little adopted boy, Teddy, 8 years old, who now, like our own, has been married and gone a week with one of the girls.

Three weeks ago to-morrow my two youngest children, Gussie and Anna, were married. Given married brothers. Notice had been given of Gussie's wedding in the church, and invitations sent out for it, but after she was married, Anna and her escort took their place and went through the same ceremony, and were there not surprised faces? for no one expected her to be married before long.

It will be long, I know, but we will have to get used to it, I am thankful that all of my children have found in their own and good companions. I am glad I have lived to see them all settled.

The doctor looked at a group picture taken ten years ago of the children. "I wish they were all at home like that now," he said. "I can't say that I do, for there has been considerable anxiety in those ten years—hard work at that. I came to the Home Circle and told when my boy was born, 26 years ago, and now he has a fine boy 8 months old. Do you suppose I'll live long enough to tell you of a great-grandchild? I needn't be so very ancient—no more than 80."

I am sorry to hear of Rosa Autumn's indisposition. I have wanted so much to visit her and see her flowers, her roses. I had a three days' visit from one of her neighbors, District President W. C. T. U. Mrs. M. C. Collins of Vandeventer, a lovely woman.

My Myrtle's pen is as facile as ever. I am so glad to see so many of the old writers in our columns. I am sorry that the World's Fair has been postponed, as my daughter in Brownsville, Tex., intended coming home when there were cheap rates during the Fair; and now it will be another year before I will see her.

I hope the reunion will be a success. I hope to be there and hope to make the acquaintance of many members of the Home Circle and have a fine time at the Fair.

MRS. M. A. BUCKNELL.
Madison Co., Ill.

Written for the RURAL WORLD.
TO DESTROY INSECTS.

To keep ants out of the preserve jars sprinkle a liberal supply of slacked lime on the board or shelf and place the jar on it. I should think lime would keep them out of the milk when water is not needed in cool weather. Lime is the most useful article in purifying the premises. Two boxes have just been placed in the cellar, in which lime is kept to slacked and used. This is not meant for the experienced housewife, for from them I am willing to learn. Try a circle of slacked lime around the milk jars. Before we tried lime we used salt or cayenne pepper around anything of which ants are fond. While it would answer as a barrier to the enemy it was objectionable. The salt melted during damp weather and run, the pepper dried in warm weather and flew. Use Paris green and meal mixed for roaches. This is good to free a place of roaches, but don't put it near the pantry, nor where children can reach it.

MARTHA.

St. Clair Co., Ill.

Written for the RURAL WORLD.
WASHING WOOLEN BLANKETS.

This was an invaluable method used by a colored laundress in our family for years. It is not meant for the experienced housewife, for from them I am willing to learn. Try a circle of slacked lime around the milk jars. Before we tried lime we used salt or cayenne pepper around anything of which ants are fond. While it would answer as a barrier to the enemy it was objectionable. The salt melted during damp weather and run, the pepper dried in warm weather and flew. Use Paris green and meal mixed for roaches. This is good to free a place of roaches, but don't put it near the pantry, nor where children can reach it.

Never put woolen blankets in the general wash. Choose a sunny, clear day to wash them. Make a good suds, using a teaspoonful of borax to every gallon of water. Have the water as hot as the hands can bear comfortably. Use rain water and pure soap. Two persons are needed properly to put a blanket into shape. First let the blankets lie ten minutes in the suds, but keep working them up and down occasionally during this time. If necessary rub with the hands, but not on the wash board.

In the first place never allow them to get much soiled before washing. Many think it healthier to have them washed than cleaned. After wringing, pull into shape and dry as quickly as possible. Be careful not to stretch them when hanging over the line, but pull in shape during the process of drying. Never hang woolens in the hot sun. The borax should also be put in the rinsing water.



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Write for the RURAL WORLD.
CLIFF REMINISCENCES SKETCHES.

A Fight With Wolves.

One afternoon during the remarkably cold winter of 1883-4 two hunters and four hounds came strolling through the woods from the historic hamlet of London City, away to the west and arrived on the bank of Cave Hollow. They entered its recesses and had their first view of the cave.

The weather was intensely cold and they were nearly frozen. By dint of hard labor and perseverance they succeeded in lighting a fire, barely sufficient to warm their benumbed fingers. As the darkness of night surrounded them they retired within the cave and for a time endeavoring to keep warm by walking and dancing.

Soon a new horror appeared. A legion of dark forms, with bright, shining eyes, snarling and vicious, appeared at the entrance, determined to invade it. A terrible contest ensued. The hunters fought hard to repel them. One fired while the other loaded until their ammunition was exhausted, when they used their guns as clubs in beating back the wolves.

Thus they fought through the long hours of the night, slaying many of the animals, which were devoured by their companions as fast as slain, and yet their number did not seem to diminish. The hunters only succeeded in beating them back to the entrance, where they were almost overcome by the vigorous onslaught of the half-starved and frenzied varmints.

At last the dawn of morning broke in the east and with the increasing light the horde of rapacious assailants disappeared. The hunters, after waiting for about an hour, saw that many German men think the way a bird of "good luck." We feed our birds in winter, scattering wheat where they can get at it, near the fences. The boys shoot at every English sparrow they see, and I do not think there is a nest on the farm.

I am pretty sure that these days, and find but little time to write, but the RURAL WORLD shall always come first on my list.

Higginsport, O.
C. D. LYON.

Written for the RURAL WORLD.
BREEZES FROM SEVEN PINES.

Above the Great Fall there are smaller falls. The principle of truth is closely blended with the heavenly beauties.

It is a wise provision of Providence that we have to ascend the ladder one round at a time. Often the greatest testimony for good is to keep sweet and silent. "Let the heathen be wise," says the Lord.

Well does heaven take care that we shall reap what we sow. Wrong acts to God or humanity or upon ourselves bring swift punishment. Retributive justice worketh truly.

The shining way has but few travelers. Bunyan's Pilgrim found only a few who were going to the Celestial City. The Pilgrim upon the highway will have the presence of the Comforter; that is sufficient.

One of the astonishments of life is that we meet so few who are truly concerned about laying up treasure above.

Be sweet, be sensible. Say "yes" kindly. The traveler who set out from Berlin thought to be sociable to his fellow travelers, and wondered after a while why he received no response. Extending his hand he made the discovery that his companions in the coach were merely weary.

Rivers and hills and trees and birds are better company than certain people and certain books. Keep grading up. I think that the best school for a child up to ten years of age is the company of a good mother. JASPER BLINES.
Clark Co., Mo.

HOUSE CLEANING.

We are constantly hearing lamentations from modern housekeepers on their lives of drudgery, with every-day monotonously like every other day, and with a future with seemingly nothing better in store. An endless ignominious struggle with cobwebs and dust. There are codes of common sense rules, which might be laid down for such weary ones, but perhaps theories will avail but little in view of facts. Just enter the average house; see the crowded condition of the rooms, teeming with duplicated ornamental articles, and the cluttered shelves; the stacks of superfluous commodities, every one of which is too remnant to be parted from, and every one of which must twice a year be hauled out and cleaned and put back. A "savings" neighbor of mine died some time since, and the little was a regular savings bank. Every useful specimen of crockery and old-fashioned garment was there; representing so many steps up the ladder, and so many hours of conscientious dusting; the idea of destroying or giving them away never occurred to the lady, as each year the accumulations piled themselves into mountains. In this light certainly a charge of drudgery is well sustained.—Mrs. Gulick, in Table Talk.

DO YOUR BEST.

The signs are bad when folks commence a-baiting! "bait" with Providence, and balkin' "bait" the earth don't shake. At every prancin' step they take. No man is great till he can see how less than little he would be if stripped to self and stark and bare. He hung his sign out everywhere.

My doctern is to lay aside Contentions and be satisfied; Jest do yer best, and praise er blame That folers that counts jest the same. I've allus noticed that success Is mixed with troubles, more or less. And it's the man who does all the best. That gets more kinks than all the rest.

—James Whitcomb Riley.

ODDS AND ENDS FROM OHIO.

Editor RURAL WORLD: Thanks to all Clarks for their kindly mention, perhaps I may get to meet May Myrtle at the State Fair week this fall. I know we will be good friends because we both like a fine cat.

Near Yellow Springs, Ohio, where I attended school, "Dutchman's pipe vine" is sometimes found growing wild; it is a fine climber.

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Higginsport, O.
C. D. LYON.

Written for the RURAL WORLD.
BREEZES FROM SEVEN PINES.

Above the Great Fall there are smaller falls. The principle of truth is closely blended with the heavenly beauties.

DO YOUR BEST.

The signs are bad when folks commence a-baiting! "bait" with Providence, and balkin' "bait" the earth don't shake. At every prancin' step they take. No man is great till he can see how less than little he would be if stripped to self and stark and bare. He hung his sign out everywhere.

My doctern is to lay aside Contentions and be satisfied; Jest do yer best, and praise er blame That folers that counts jest the same. I've allus noticed that success Is mixed with troubles, more or less. And it's the man who does all the best. That gets more kinks than all the rest.

—James Whitcomb Riley.

ODDS AND ENDS FROM OHIO.

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Well does heaven take care that we shall reap what we sow. Wrong acts to God or humanity or upon ourselves bring swift punishment. Retributive justice worketh truly.

The shining way has but few travelers. Bunyan's Pilgrim found only a few who were going to the Celestial City. The Pilgrim upon the highway will have the presence of the Comforter; that is sufficient.

One of the astonishments of life is that we meet so few who are truly concerned about laying up treasure above.

Be sweet, be sensible. Say "yes" kindly. The traveler who set out from Berlin thought to be sociable to his fellow travelers, and wondered after a while why he received no response. Extending his hand he made the discovery that his companions in the coach were merely weary.

Rivers and hills and trees and birds are better company than certain people and certain books. Keep grading up. I think that the best school for a child up to ten years of age is the company of a good mother. JASPER BLINES.
Clark Co., Mo.

HOUSE CLEANING.

We are constantly hearing lamentations from modern housekeepers on their lives of drudgery, with every-day monotonously like every other day, and with a future with seemingly nothing better in store. An endless ignominious struggle with cobwebs and dust. There are codes of common sense rules, which might be laid down for such weary ones, but perhaps theories will avail but little in view of facts. Just enter the average house; see the crowded condition of the rooms, teeming with duplicated ornamental articles, and the cluttered shelves; the stacks of superfluous commodities, every one of which is too remnant to be parted from, and every one of which must twice a year be hauled out and cleaned and put back. A "savings" neighbor of mine died some time since, and the little was a regular savings bank. Every useful specimen of crockery and old-fashioned garment was there; representing so many steps up the ladder, and so many hours of conscientious dusting; the idea of destroying or giving them away never occurred to the lady, as each year the accumulations piled themselves into mountains. In this light certainly a charge of drudgery is well sustained.—Mrs. Gulick, in Table Talk.

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much money after you count up the cost of the feed. Brood sows should be on grass alone in the summer after the pigs are weaned. This is the way I treat my sows, and it accounts in part for the good litters in the spring, says the writer. The feed that we use we raise on our farm, and it is mostly corn and oats. This is what we give our pigs and hogs, and to our sows we give bran and shorts while they are suckling pigs, and they do well on this kind of feed. With this feed you can develop bone, muscle and growth. After the pig is weaned we give him corn and oats ground together, one-third oats and two-thirds corn, with a mixture of shorts and bran in about equal parts, with plenty of grass. This causes the best development and growth. I do not believe it is necessary to buy carloads of linseed meal, hominy hearts or so much prepared food of different kinds to make one's pigs grow if one is on to his business and feeds right. As a successful raiser of hogs, one must use judgment in raising his own feed and preparing it so that he will get the best results. This gives the greatest profit, and that is what we are looking for.

CANKER SORES IN SWINE.

From inquiries received at the Wisconsin Experiment Station it is evident that the swine-raisers are losing many of their young pigs by a disease known as "canker sore mouth." This appears to be very prevalent in many sections, and is quite fatal where measures are not taken promptly to apply a suitable remedy. The disease is evidently infectious in character and attacks young pigs any time from birth until six weeks old.

The symptoms are as follows: Large water-blisters appear about the lips and snout, rapidly succeeded by much heat and swelling of the parts, and later thick brown scabs appear, which open into deep cracks. These scabs extend over the face, head and in extreme cases even to the body and limbs, the joints of the latter becoming much swollen and inflamed.

Ulcers form about the snout and jaws, eating the flesh from the bones. The pigs show dulness, a disinclination to move, often refuse to suckle, or do so in a very half-hearted manner.

To be effective, the treatment should be prompt. The first step is to prepare a solution of permanganate of potash, which can be had at any drug store, using one ounce of the crystals dissolved in one gallon of water in a common pail. The young pigs should be dipped head foremost into the solution and kept there for a brief time. Repeat this two or three times, giving the pig time to catch its breath in the intervals.

This treatment given every day for three or four days will effect a cure, if the trouble is not of long standing. In extreme cases, where ulcers and heavy scabs have formed about the jaws and nose of the pigs, the removal of the permanganate to one gallon of water, and before dipping remove all the dead and loose tissue that has been eaten away. The sow's udder should be bathed freely with the solution each day.

Remove the sow and pigs to fresh quarters if possible, and see to it that other successful litters are not farrowed in the pen where the affected pigs were housed, until it has been thoroughly disinfected. Benefit will be derived from a laxative given the sow; a pint of raw linseed oil in her slop or in milk will be suitable.

PASTURES FOR THE PIGS.

The pasture for the swine of all ages is a very important matter in growing hogs. There is no time in the life of the hog that a nice, well kept pasture is not a valuable adjunct to the industry, says "Nebraska Farmer." It is especially valuable to the little growing pig, to the breeding sow, and to the shot that is merging into hoghood. In fact, there are no conditions of swine growing, from the suckling pig to the mature fat hog, for which a pasture is not serviceable.

The hog pasture must be more than an open lot or field, barren of nutritious grasses. Many hog pastures are little more than exercise lots. They have no pasture grasses growing on them, some never had, others have been pastured so close by overstocking that they have ceased to be pastures. The grass has given way to weeds and they are devoid of the real advantages that swine should receive from pastures.

It is not necessary to fence off large tracts at great expense and call them hog pastures. A pasture cannot be made from native grasses. It requires a tame grass pasture for swine, either alfalfa or red clover. Other grasses are sometimes used and may be used to advantage if made into a solid, permanent pasture.

The cheapest, quickest and best hog pasture is the alfalfa. It is a rank grower and keeps ahead of the hog, this is an important feature, to have a pasture that is a full supply for the herd of swine. In pasturing hogs, it is best to have small inclosures and arranged so the herd can rotate in grazing, taking one pasture each week, never allowing the hog to stay on the same pasture for more than one week, thus keeping on practically fresh grass all the time. A few acres can be made to pasture a large number of hogs when confined to suitable lots.

The hog pasture is an auxiliary to the feed lot. It should not be made to take the place of the feed lot, but the corn crib, the hog raiser who makes a success of hog raising and hog feeding will use the pasture to help in the growth and health of his hogs. A large hog lot with adjoining pastures is a convenience that the hog raiser should provide on the farm. The hogs can thus be let onto the pasture, will and shut off to suit the demands.

The pasture is almost as important as the feed lot. If you have not the alfalfa hog pasture you should lose no time in starting one. Some sow rape for the hogs to pasture on, others sow rye, while some sow sorghum. Any green crop is better than a dry lot. Swine of all ages should be supplied with a liberal allowance of green feed and the more permanent this supply can be made the cheaper it will be and the less liability to neglect in this important feature of hog feeding.

WHEN BROOD SOWS SHOULD BE SOLD.

Many farmers and breeders, thinking their brood sows too old for longer service, market them when they are just in their prime. The age of brood sows has much to do with their value as workers. They should be retained as breeders as long as they breed regularly and produce good litters. When a sow, three or four years of age, falls in this respect, the trouble may be traced to underfeeding too much of the time, breeding when too thin in flesh and keeping her in that condition while in farrow. Too often this half-starved condition causes the sow to become unweaned and hard to keep in an

enclosure and she is apt to eat whatever is within her reach, whether or not it is the kind of feed she should have, says the "Prairie Farmer."

Often times a sow when inclined to break through her inclosure can be restrained by ringing. In the meantime and before the sow has to use her nose again the weak places in the fence should be strengthened. A rail fence, light in weight and easily broken, is not of much use in restraining a hungry sow.

Many farmers accept it as a fact that the moment a three-year-old brood sow becomes unweaned she must be disposed of. When from two or six years old, a brood sow should be a regular worker. If her strength and vigor seem to break during these four years of work, do not cast her aside, but give her a short period of rest. This rest is more profitable for the owner than to send the sow to market and put a young untried one in her place. Continued grain feeding, especially corn, in too great quantities, quickly lessens the sow's usefulness. Eating the hard corn wears out the teeth before the other parts of the body show signs of weariness.

One sure sign of old age and diminishing value is too many runs in a litter. When one or more runs appear in a litter of ten or more pigs, the farmer, as a rule, does not place this against the sow. But if at each succeeding farrowing the number of runs increases, then he is justified in sending the sow to market and selecting another to fill her place. Occasionally a sow can be bred till she is nine or ten years old, and sometimes longer. The idea that a sow is no longer useful after she becomes three or four years old should be done away with and the sow used as long as she is valuable as a pig-producer.

PIG POINTERS.

Burnt corn or charcoal is good for scours.

To raise pigs they must be kept in a good healthy condition.

No animal will make so large returns in so short a time as the pig.

Care should be taken not to allow the sow with pig to get too fat.

So far as can be done the sow should have abundant opportunity for exercise.

During the winter special care should be taken to protect the little pigs from cold.

Allowing the pigs to sleep in damp quarters often induces cold and rheumatism.

Ulcers form about the snout and jaws, eating the flesh from the bones.

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In pasturing hogs, it is best to have small inclosures and arranged so the herd can rotate in grazing, taking one pasture each week, never allowing the hog to stay on the same pasture for more than one week, thus keeping on practically fresh grass all the time.

A few acres can be made to pasture a large number of hogs when confined to suitable lots.

The hog pasture is an auxiliary to the feed lot.

It should not be made to take the place of the feed lot, but the corn crib, the hog raiser who makes a success of hog raising and hog feeding will use the pasture to help in the growth and health of his hogs.

A large hog lot with adjoining pastures is a convenience that the hog raiser should provide on the farm.

The hogs can thus be let onto the pasture, will and shut off to suit the demands.

The pasture is almost as important as the feed lot.

If you have not the alfalfa hog pasture you should lose no time in starting one.

Some sow rape for the hogs to pasture on, others sow rye, while some sow sorghum.

Any green crop is better than a dry lot.

Swine of all ages should be supplied with a liberal allowance of green feed and the more permanent this supply can be made the cheaper it will be and the less liability to neglect in this important feature of hog feeding.

It is not necessary to fence off large tracts at great expense and call them hog pastures.

A pasture cannot be made from native grasses. It requires a tame grass pasture for swine, either alfalfa or red clover.

Other grasses are sometimes used and may be used to advantage if made into a solid, permanent pasture.

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